

Date: Sat, 9 Oct 93 04:30:21 PDT  
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>  
Errors-To: Ham-Space-Errors@UCSD.Edu  
Reply-To: Ham-Space@UCSD.Edu  
Precedence: Bulk  
Subject: Ham-Space Digest V93 #50  
To: Ham-Space

Ham-Space Digest                      Sat, 9 Oct 93                      Volume 93 : Issue    50

Today's Topics:

    \* SpaceNews 11-Oct-93 \*  
        JAMSAT logo needed!!!  
    Lindenblad Antenna (2 msgs)  
        ORBS\$281.2liners  
        satellite help (2 msgs)

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>  
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>  
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available  
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text  
herein consists of personal comments and does not represent the official  
policies or positions of any party. Your mileage may vary. So there.

-----  
Date: Fri, 8 Oct 1993 10:20:25 MDT  
From: yeshua.marcam.com!zip.eecs.umich.edu!destroyer!nntp.cs.ubc.ca!alberta!  
nebulus!ve6mgs!usenet@uunet.uu.net  
Subject: \* SpaceNews 11-Oct-93 \*  
To: ham-space@ucsd.edu

SB NEWS @ AMSAT \$SPC1011  
\* SpaceNews 11-Oct-93 \*

BID: \$SPC1011

=====  
SpaceNews  
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MONDAY OCTOBER 11, 1993

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is published every week and is made available for unlimited distribution.

\* HAM RADIO TO FLY ON STS-58 \*

=====

The third SAREX (Shuttle Amateur Radio Experiment) flight of 1993 is scheduled for lift-off October 14 aboard the Space Shuttle Columbia on a 13 day mission. Crew members include Pilot Richard A. Searfoss, whose amateur license is pending, Mission Specialist William S. McArthur Jr., KC5ACR, and Payload Specialist Martin J. Fettman, KC5AXA.

Amateur Radio frequencies for the mission include: voice downlink (World-wide) 145.550 MHz, voice uplinks 144.910, 144.930, 144.950, 144.970, 144.990 MHz, voice uplink (Europe only) 144.700, 144.750, 144.800 MHz, and packet uplink: 144.490 MHz.

15 schools are scheduled to participate, in Arkansas, Texas, Ohio, Missouri, Arizona, Tennessee, New Hampshire, Kentucky, Colorado, North Carolina, Indiana, and France.

The 39 degree orbital inclination will bring the shuttle higher over the temperate latitudes of the earth allowing more ground stations to hear the Amateur Radio transmissions from the shuttle and possibly make radio contact with the astronauts themselves.

SAREX configuration 'C' is planned for this mission. This configuration includes FM voice and packet radio operations.

The following are pre-launch Keplerian elements for Shuttle mission STS-58:

STS-58

1	00058U		93287.67747791	.00119475	00000-0	26040-3 0	50
2	00058	39.0114	124.6663	0007676	272.4217	87.5676 15.96123499	22

Satellite: STS-58

Catalog number: 00058

Epoch time: 93287.67747791 = (14 OCT 93 16:15:34.09 UTC)

Element set: 005

Inclination: 39.0114 deg

RA of node: 124.6663 deg Space Shuttle Flight STS-58

Eccentricity: .0007676 Prelaunch Element set JSC-005

Arg of perigee: 272.4217 deg Launch: 14 OCT 93 14:53 UTC

Mean anomaly: 87.5676 deg

Mean motion: 15.96123499 rev/day Gil Carman, WA5NOM

Decay rate: 1.19475e-03 rev/day^2 NASA Johnson Space Center

Epoch rev: 2  
Checksum: 329

★ MIR OPERATING HINTS ★

=====

This Week: "Logging Out of MIR"

More and more people are trying to use the MIR PBBS these days, and that is fine if we all follow some simple rules.

How many times have you seen a whole MIR pass full of <<DM>> messages (DM-Disconnect mode) with no data, and it appears that no one is logged in? Well, in reality someone IS logged in, but may have gone out of range of MIR and is unable to logout of the MIR PBBS. This results in the PBBS being tied up until the watchdog timer expires and forces a disconnect to the out-of-range station. After 7-10 minutes, MIR will try to force out the missing station with ten (10) <<D>> (D-Disconnect request) packets. After the last <<D>> packet, MIR will accept the next connect request heard.

Rule: If you are connected to the MIR PBBS, make sure you send the BYE command (B) to MIR 2-minutes before LOS. This will prevent ruining a whole pass for the stations down range of your QTH.

Remember, only one station can connect to MIR's PBBS at a time. All others must wait.

[Story by G. Miles Mann, WF1F]

★ HELP WANTED ★

=====

Trevor, G0KTN, is trying to obtain a G3RUH 1200 bps PSK modem printed circuit board which he would like to use for WEBERSAT reception. According to Trevor, G3RUH has discontinued the production of this PCB and the usual suppliers are now out of stock. There are several other English stations who are also in need of the modem circuit board.

Trevor can be reached via packet at: G0KTN @ GB7SDN.#49.GBR.EU.

★ LUSAT NEWS ★

=====

Frank, KB2MVN, of Alpaus, New York has set up a packet mailbox which can be accessed by using the LUSAT-OSCAR-19 satellite as a digipeater. Frank's mailbox beacons through the satellite when it is in range of his ground station:

KB2MVN>BEACON,LUSAT-1\* <UI>:

KB2MVN MAILBOX OPEN PLEASE CONNECT Via Lusat-1

LO-19 command station LU8DYF reports that the satellite's on-board computer will be reloaded with directory broadcast software soon. Directory broadcast is a feature currently available on PACSAT-OSCAR-16.

\* KITSAT-OSCAR-25 NEWS \*

=====

SaTReC, KAIST Announces the Launch of KITSAT-OSCAR-25!

The Satellite Technology Research Center (SaTReC) at KAIST, Korea announces the successful launch and activation of a new OSCAR. KITSAT-2 was built in KAIST and is named as KITSAT-OSCAR-25 following the suggestions from the AMSAT group. KO-25 was launched by ariane 40 V59 launcher at 01:45 UTC on 26 September from Kourou Spatial Center of French Guyana. KO-25 was inserted into orbit 23 minutes after launch. KO-25 was activated 12:03 UTC on the same day from the Central Command Groundstation at SaTReC, KAIST.

KO-25 carries five payloads including a CCD Earth Imager, a Store-and-Forward mailer, a Digital Signal Processing Experiment for High Speed Modem tests and research, an Infra Red Sensor Experiment (IREX), a Low energy electron detector (LEED), and also a new computer system called KASCOM (KAIST Satellite Computer) developed for small satellites.

SaTReC sincerely express its gratitude for the help that AMSAT members have given to KAIST during their initial operation. Special thanks to Bill Tynan, Jim White, Harold Price, Jeff Ward, Eric A. Cottrell, Steve Greene, Peter Guezow, R. Campbell, Ron Parise, Tom Clark and those whom were active on the Internet during the development period.

SaTReC congratulates the EYESAT and ITAMSAT teams and the University of Surrey on the launch and activation of their satellites. For further information about SaTReC and the KITSAT-OSCAR-25 payload, please contact SaTReC via:

Tel : 82-42-869-8614  
Fax : 82-42-861-0064  
Internet : hskim@satrec.kaist.ac.kr

[Info via Hyung Shin Kim]

\* FROM THE EDITOR \*

=====

Over the past month, I have received a record number of requests from people

with Internet addresses asking to be placed on the "SpaceNews mailing list". While such a list does exist, it is used primarily to increase article circulation speed across the world-wide packet radio network. Having geographically diverse entry points into the packet radio network, radio amateurs can receive these bulletins in an acceptable amount of time around the world.

Requests from single individuals who want SpaceNews mailed to them simply to avoid searching through the rec.radio.amateur.misc, sci.space.news, and rec.radio.info newsgroups on Usenet cannot not be accepted. It just takes more time than I have available to maintain a large and growing mailing list.

Please take advantage of the wide circulation SpaceNews currently enjoys through Usenet, amateur packet radio, digital amateur satellites, as well as the Internet (finger [magliaco@pilot.njin.net](mailto:magliaco@pilot.njin.net)).

\* THANKS! \*

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Thanks to all those who sent messages of appreciation regarding SpaceNews, especially:

Dana Rollins

N2JUX

KC4LDT

OH7HJ

\* FEEDBACK/INPUT WELCOMED \*

=====

Mail to SpaceNews should be directed to the editor (John, KD2BD) via any of the following paths:

FAX : 1-908-747-7107

PACKET : KD2BD @ N2KZH.NJ.USA.NA

INTERNET : [kd2bd@ka2qhd.ocpt.ccur.com](mailto:kd2bd@ka2qhd.ocpt.ccur.com) -or- [kd2bd@amsat.org](mailto:kd2bd@amsat.org)

MAIL : John A. Magliacane, KD2BD  
Department of Engineering and Technology  
Advanced Technology Center  
Brookdale Community College  
Lincroft, New Jersey 07738  
U.S.A.

<<= SpaceNews: The first amateur newsletter read in space! -=>>

/EX

--

John A. Magliacane, KD2BD \* /\ /\ \* Voice : 1-908-224-2948

Advanced Technology Center |/\|/\| Packet : KD2BD @ N2KZH.NJ.USA.NA  
Brookdale Community College |/\|/\| Internet: kd2bd@ka2qhd.ocpt.ccur.com  
Lincroft, NJ 07738 \* \/\| \* Morse : -.- -.. ..--- -... -..

-----  
Date: 9 Oct 93 05:05:56 GMT  
From: ogicse!uwm.edu!spool.mu.edu!umn.edu!csus.edu!netcom.com!  
fmitch@network.ucsd.edu  
Subject: JAMSAT logo needed!!!  
To: ham-space@ucsd.edu

hi, mitch here in mobile, alabama... i am building the tapr/jamsat  
trakbox and a friend is laying out a front panel for me with a  
graphics program (corel draw)... i want to put both the tapr and  
the jamsat logos on the front panel... we have the tapr logo  
digitized but i can't find the logo for jamsat to copy... is  
there anyone out there with a copy of the jamsat logo??? preferably  
a giff file? or, just plain hard copy would be great... i am ready  
to paint the front panel and need the logo desperately... i will  
be glad to make the layout graphic available on the net as soon  
as i get it finished... thanks...

mitch, wa4osr

--  
fmitch@netcom.com  
Felton Mitchell, WA4OSR in Mobile, Alabama USA  
co-sysop for W4IAX bbs running fbb ... sysop for WA4OSR DXCluster in Mobile..

-----  
Date: 8 Oct 93 13:41:54 GMT  
From: ogicse!emory!kd4nc!ke4zv!gary@network.ucsd.edu  
Subject: Lindenblad Antenna  
To: ham-space@ucsd.edu

In article <1993Oct8.005610.16062@muug.mb.ca> bwalzer@muug.mb.ca (Bruce Walzer)  
writes:

>In <CEJGF4.HFr@freenet.carleton.ca> ae517@Freenet.carleton.ca (Russ Renaud)  
writes:

>>Has anyone on this newgroup actually built a Lindenblad. How well does it  
>>work for LEO satellites, such as the APT birds or digital hamsats?

>

>It worked not all that great for weathersat reception. The problem seemed to  
>be periodic reflections from the ground. I would get regular noise bands  
>across the image. It also seemed to be fairly subject to terrestrial noise  
>pickup (ignition and/or powerline noise).

>I eventually ended up with a turnstile with a large area of chicken wire as  
>the reflector (something like 12 feet across (4 Metre)). This works very  
>well for weathersat work. I get noise free images from about 25 degrees  
>elevation and above. You really need the large reflector to prevent the  
>turnstile from seeing the ground reflections. I have no idea how the  
>turnstile-reflector that used to be in the Radio Amateur handbook worked  
>with the specified tiny reflector.

Well try the Lindenblad over the chicken wire. You might be pleased  
with the result.

>I haven't tried it, but the Zapper as described in The Weather Satellite  
>Handbook looks good for weather sat work. It's just a 2 element circular  
>polarized beam pointing straight up.

This sucks. Most of the gain is straight up where you don't need it,  
and the pattern toward the horizon is full of holes. The majority of  
a pass is spent below 45 degrees above your local horizon. You need  
to concentrate the pattern there. The Zapper does the reverse. The  
turnstile over a groundplane is similar. If you don't have the ability  
to use al-el tracking beams, about the best setup uses two 4 el beams  
back to back tilted up about 30 degrees. All you have to do is line it  
up for the pass and switch from one to the other when the bird goes  
overhead. For passes that stay near the horizon, you just stay with  
the beam pointing that way.

Gary

--

Gary Coffman KE4ZV	"If 10% is good enough	gatech!wa4mei!ke4zv!gary
Destructive Testing Systems	for Jesus, it's good	uunet!rsiatl!ke4zv!gary
534 Shannon Way	enough for Uncle Sam."	emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244	-Ray Stevens	

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Date: Fri, 8 Oct 1993 15:47:24 GMT  
From: mdisea!mothost!schbbs!news@uunet.uu.net  
Subject: Lindenblad Antenna  
To: ham-space@ucsd.edu

In article <CEJGF4.HFr@freenet.carleton.ca>, ae517@Freenet.carleton.ca (Russ  
Renaud) says:

>

>

>I saw a brief construction article on the Lindenblad antenna for 137MHz  
>using folded dipoles placed inside PVC tubing. The author does not  
>described the method used to connect the 4 feedlines together, referencing  
>past construction articles, which I assume provided these details.

>  
>Should all four dipoles be fed in phase?  
>  
>Has anyone on this newgroup actually built a Lindenblad. How well does it  
>work for LEO satellites, such as the APT birds or digital hamsats?  
>  
>Any info would be appreciated.  
>  
>73 de ve3uav/aa8lu  
>  
>--

Russ,

I have been using a homemade Lindenblad antenna for LEO WX satellite reception for several years. They are about the best antenna for weather satellite reception that I have ever found and I've tried them all. They provide good gain at low elevation angles where the signals are usually weakest. In a properly assembled antenna, there will some holes in the coverage at certain elevation angles. Mine always has a major hole when the bird is at 80 degrees elevation. Bt other than that, they are very good.

You do feed all the dipoles in phase. I I simply paralleled all of the four twin lead phasing sections together on a female N connector and RTV'd the whole thing for some semblance of a weather seal (rain is not the primary concern out here in AZ). Polarization sense of the antenna is determined by the orientation of the dipoles. When I built mine, I patterned it after the article that is in the Amateur Radio Satellite Handbook. I scaled it from the two meter design to 137 MHz.

Good luck. By the way, this is my first time on to USENET. I am using this message to test the system. If it gets to you, please reply to let me know that it works.

73's....Ned

-----  
Date: Fri, 8 Oct 1993 14:07:48 MDT  
From: yeshua.marcam.com!zip.eecs.umich.edu!destroyer!nntp.cs.ubc.ca!alberta!  
nebulus!ve6mgs!usenet@uunet.uu.net  
Subject: ORBS\$281.2liners  
To: ham-space@ucsd.edu

SB KEPS @ AMSAT \$ORBS-281.N  
2Line Orbital Elements 281.AMSAT

HR AMSAT ORBITAL ELEMENTS FOR AMATEUR SATELLITES IN NASA FORMAT  
FROM WA5QGD FORT WORTH,TX October 8, 1993  
BID: \$ORBS-281.N



DECODE 2-LINE ELSETS WITH THE FOLLOWING KEY:

1 AAAAAU 00 0 0 BBBB.BBBBBBBB .CCCCCCC 00000-0 00000-0 0 DDDZ  
2 AAAAA EEE.EEEE FFF.FFFF GGGGGG HHH.HHHH III.IIII JJ.JJJJJJJKKKKKZ  
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN  
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

TO ALL RADIO AMATEURS BT

AO-10

1 14129U 83058B 93279.33702867 -.000000081 00000-0 10000-3 0 824  
2 14129 27.1481 2.4799 6019419 119.8710 312.5993 2.05881755 77546

UO-11

1 14781U 84021B 93279.05004301 .000000226 00000-0 42445-4 0 4863  
2 14781 97.8034 300.5131 0012576 8.4843 351.6574 14.69061909512997

RS-10/11

1 18129U 87054A 93278.03187301 .00085273 00000-0 89555-4 0 6917  
2 18129 82.9286 157.4421 0012715 19.6721 340.4929 13.72324084314917

AO-13

1 19216U 88051B 93281.01224299 -.000000111 00000-0 10000-4 0 6955  
2 19216 57.8884 290.6961 7215384 325.7101 4.0040 2.09725266 40723

FO-20

1 20480U 90013C 93278.57339399 .000000015 00000-0 64973-4 0 5012  
2 20480 99.0200 113.7965 0540564 196.4232 161.8733 12.83221641171478

AO-21

1 21087U 91006A 93278.62193580 .00085270 00000-0 82657-4 0 9058  
2 21087 82.9460 331.1060 0037009 73.6883 286.8338 13.74525744134612

RS-12/13

1 21089U 91007A 93278.80710254 .00085206 00000-0 15747-4 0 4717  
2 21089 82.9242 200.0791 0030408 94.7391 265.7238 13.74027067133711

ARSENE

1 22654U 93031B 93253.49977207 -.000000056 00000-0 10000-3 0 236  
2 22654 1.2946 120.3715 2933550 152.0186 99.4287 1.42203372 1781

UO-14

1 20437U 90 5 B 93278.71261438 .000000051 00000-0 27704-4 0 7775  
2 20437 98.6087 1.7388 0010392 216.6364 143.4106 14.29794379193227

AO-16

1 20439U 90 5 D 93278.70814662 .000000043 00000-0 24331-4 0 5827  
2 20439 98.6157 2.7150 0010548 217.0707 142.9747 14.29852298193235

DO-17

1 20440U 90005E 93278.75704706 .000000064 00000-0 32604-4 0 6276  
2 20440 98.6160 3.0053 0010783 216.6836 143.3609 14.29989186193257

WO-18

1 20441U 90005F 93278.72813673 .000000043 00000-0 24642-4 0 6289  
2 20441 98.6156 2.9956 0011265 216.8040 143.2369 14.29967652193254

LO-19

1 20442U 90005G 93278.72302054 .000000061 00000-0 31490-4 0 6252  
2 20442 98.6164 3.1892 0011532 216.4188 143.6210 14.30059141193269

UO-22

1	21575U	91050B	93278.68970014	.000000068	000000-0	30010-4	0	3243
2	21575	98.4627	352.9751	0007676	337.8695	22.2159	14.36853977116537	
K0-23								
1	22077U	92052B	93278.76031854	.000000000	000000-0	10000-3	0	1603
2	22077	66.0854	92.6845	0002474	358.7953	1.3056	12.86280742	54059
A0-27								
1	22825U	93061C	93274.12386161	-.000000103	000000-0	-33906-4	0	50
2	22825	98.6809	347.1732	0007375	241.9084	118.1352	14.27580958	727
I0-26								
1	22826U	93061D	93274.19358382	.000000377	000000-0	16923-3	0	41
2	22826	98.6809	347.2439	0008040	243.2830	116.7529	14.27685136	732
K0-25								
1	22830U	93061H	93280.63866984	.000000210	000000-0	92350-4	0	106
2	22830	98.5818	353.5729	0011095	190.6946	169.4001	14.28007077	1650
NOAA-9								
1	15427U	84123A	93279.13769814	.000000082	000000-0	53856-4	0	5117
2	15427	99.0907	321.1737	0014269	215.0530	144.9711	14.13549770454446	
NOAA-10								
1	16969U	86073A	93279.02353885	.000000058	000000-0	32782-4	0	3543
2	16969	98.5169	290.7467	0013928	355.1377	4.9686	14.24834131366403	
MET-2/17								
1	18820U	88005A	93278.02288627	.00085229	000000-0	34359-4	0	9291
2	18820	82.5399	111.5660	0016269	173.6665	186.4705	13.84694601287049	
MET-3/2								
1	19336U	88 64 A	93278.65591096	.000000043	000000-0	99999-4	0	670
2	19336	82.5455	143.8069	0016538	176.2985	183.8263	13.16961563249754	
NOAA-11								
1	19531U	88089A	93277.93296591	.000000095	000000-0	61448-4	0	2594
2	19531	99.1439	255.9680	0012068	126.4320	233.7955	14.12920163259162	
MET-2/18								
1	19851U	89 18 A	93278.66462675	.000000064	000000-0	52396-4	0	8315
2	19851	82.5238	346.8440	0013488	218.9823	141.0368	13.84345556232475	
MET-3/3								
1	20305U	89086A	93278.50637636	.000000043	000000-0	10000-3	0	7838
2	20305	82.5499	87.0477	0015661	199.0628	160.9909	13.16023772189617	
MET-2/19								
1	20670U	90057A	93278.78753400	.00085200	000000-0	79036-5	0	6261
2	20670	82.5447	50.5344	0016314	136.3134	223.9320	13.84179033165422	
FY-1/2								
1	20788U	90081A	93278.78871784	.000000245	000000-0	18522-3	0	6788
2	20788	98.8529	301.8458	0015640	5.7512	354.3831	14.01302330158078	
MET-2/20								
1	20826U	90086A	93278.68011622	.00085238	000000-0	43276-4	0	6300
2	20826	82.5291	348.4787	0014670	44.0352	316.1974	13.83559776152568	
MET-3/4								
1	21232U	91030A	93278.71753460	.000000043	000000-0	10000-3	0	4496
2	21232	82.5460	349.5022	0014440	100.3202	259.9549	13.16455754117871	
NOAA-12								

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1 21263U 91032A 93278.54453335 .00000137 00000-0 70259-4 0 7211
2 21263 98.6497 306.6003 0012106 256.5152 103.4685 14.22316133124339
MET-3/5
1 21655U 91056A 93278.52367502 .00000043 00000-0 10000-3 0 5075
2 21655 82.5533 296.5943 0014494 109.2260 251.0431 13.16824192102946
NOAA-13
1 22739U 93050 A 93277.06382288 .00000179 00000-0 10006-3 0 252
2 22739 098.9148 217.8797 0009985 121.5673 238.7045 14.10854129007833
MET-2/21
1 22782U 93055 A 93277.11328007 -.000000009 00000-0 00000 0 0 195
2 22782 082.5464 049.3555 0021895 222.6575 137.3459 13.82985449004691
MIR
1 16609U 86017A 93279.64313042 .00008793 00000-0 12123-3 0 4036
2 16609 51.6178 19.4336 0006237 271.5821 88.4456 15.58056822436507
HUBBLE
1 20580U 90037B 93278.80555295 .00000704 00000-0 59148-4 0 2559
2 20580 28.4696 71.2857 0004499 122.5379 237.5642 14.92851686188058
GRO
1 21225U 91027B 93278.35734058 .00050914 -28759-5 18552-3 0 660
2 21225 28.5187 212.0882 0111641 9.9438 345.9905 15.77302008 17494
UARS
1 21701U 91063B 93278.64533739 .00002432 00000-0 23513-3 0 3014
2 21701 56.9828 98.8945 0004765 103.9118 256.2447 14.96188134112828
POSAT
1 22829U 93061 G 93277.20552868 .00000115 00000-0 46684-4 0 42
2 22829 098.6744 350.2287 0010036 225.2945 134.7970 14.27973759001151
/EX

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Date: Thu, 7 Oct 1993 23:36:58 GMT  
From: swrinde!sdd.hp.com!col.hp.com!news.dtc.hp.com!hplextra!hpscit.sc.hp.com!  
icon.rose.hp.com!greg@network.ucsd.edu  
Subject: Satellite Help  
To: ham-space@ucsd.edu

Marco,

Mentioning "rotor control hardware" makes me think the program is configured to talk to an antenna mover. I've made lots of contacts through RS-10 with a simple vertical uplink antenna (5/8 Jpole) and a long wire antenna for the downlink. No antenna rotors needed.

Greg KD6KGW

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Date: Fri, 8 Oct 1993 10:41:14 GMT  
From: mvb.saic.com!unogate!news.service.uci.edu!usc!howland.reston.ans.net!  
spool.mu.edu!cass.ma02.bull.com!minerva1!gara@network.ucsd.edu  
Subject: satellite help  
To: ham-space@ucsd.edu

Ciao Marco,  
ho letto la tua mail molto velocemente.  
Io lavoro su tutti i satelliti digitali e non (tranne serie RS ).  
Uso il programma istantrack per sapere l'acquisizione dei satelliti.  
Visto che siamo anche vicini ci potremmo sentire in 2 metri,e scambiarsi  
le impressioni molto piu' velocemente che via internet o packet.  
Ciao ti saluto e fammi sapere qualcosa

73' de ivano

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